

CLAIMS

1. A method for luminance noise filtering, comprising:
inputting a region of pixel data from an image sensor; and
5 determining a virtually filtered luminance from the region of pixel data for a pixel
location within the region.

2. The method of claim 1, further comprising:
determining interpolated color components for the pixel location from the region
10 of pixel data.

3. The method of claim 2, further comprising:
determining a reference luminance for the pixel location from the interpolated
color components.

15 4. The method of claim 3, further comprising:
selecting between the virtually filtered luminance and the reference luminance as a
final luminance of the pixel location depending on an adaptive luminance.

20 5. The method of claim 4, further comprising:
determining a threshold value from the adaptive luminance;
selecting the virtually filtered luminance if an absolute of a difference between the
virtually filtered luminance and the reference luminance is less than or equal to the
threshold value; and
25 selecting the reference luminance if the absolute of the difference between the
virtually filtered luminance and the reference luminance is greater than the threshold
value.

6. The method of claim 5, wherein the adaptive luminance is determined from an
30 overall brightness of a previous image.

7. The method of claim 5, wherein the adaptive luminance is determined from an

average reference luminance for a predetermined region of pixel data.

8. The method of claim 5, wherein the threshold value is greater when the adaptive luminance is lower.

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9. The method of claim 4, wherein the adaptive luminance is indicated by an auto exposure gain for the image sensor.

10. The method of claim 4, wherein the adaptive luminance is indicated by the reference luminance.

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11. The method of claim 1, wherein the virtually filtered luminance is determined by averaging a respective pixel data multiplied with a respective weighting coefficient for each pixel location of the region.

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12. The method of claim 1, wherein the image sensor is part of a hand-held image pick-up device having minimized line memory capacity.

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13. A system for luminance noise filtering, comprising:
a memory device for storing a region of pixel data from an image sensor; and
a noise filter for determining a virtually filtered luminance from the region of pixel data for a pixel location within the region.

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14. The system of claim 13, further comprising:
a matrix for determining interpolated color components for the pixel location from the region of pixel data.

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15. The system of claim 14, wherein the matrix determines a reference luminance for the pixel location from the interpolated color components.

16. The system of claim 15, wherein the noise filter selects between the virtually

filtered luminance and the reference luminance as a final luminance of the pixel location depending on an adaptive luminance.

17. The system of claim 16, further comprising:

5 a data processor that determines a threshold value from the adaptive luminance;
wherein the noise filter selects the virtually filtered luminance if an absolute of a difference between the virtually filtered luminance and the reference luminance is less than or equal to the threshold value; and

10 wherein the noise filter selects the reference luminance if the absolute of the difference between the virtually filtered luminance and the reference luminance is greater than the threshold value.

18. The system of claim 17, wherein the adaptive luminance is determined from an overall brightness of a previous image.

15 19. The system of claim 17, wherein the adaptive luminance is determined from an average reference luminance for a predetermined region of pixel data.

20 20. The system of claim 17, wherein the threshold value is greater when the adaptive luminance is lower.

21. The system of claim 16, wherein the adaptive luminance is indicated by an auto exposure gain for the image sensor.

25 22. The system of claim 16, wherein the adaptive luminance is indicated by the reference luminance.

30 23. The system of claim 13, wherein the virtual luminance is determined by averaging a respective pixel data multiplied with a respective weighting coefficient for each pixel location of the region.

24. The system of claim 13, wherein the image sensor is part of a hand-held image pick-up device having minimized line memory capacity.

25. A system for luminance noise filtering, comprising:

5 means for inputting a region of pixel data from an image sensor; and
means for determining a virtually filtered luminance from the region of pixel data for a pixel location within the region.

26. The system of claim 25, further comprising:

10 means for determining interpolated color components for the pixel location from the region of pixel data.

27. The system of claim 26, further comprising:

15 means for determining a reference luminance for the pixel location from the interpolated color components; and
means for selecting between the virtually filtered luminance and the reference luminance as a final luminance of the pixel location depending on an adaptive luminance.